

<b>National Imaging Associates, Inc.*</b>	
<b>Clinical guidelines</b> <b>LOWER EXTREMITY MRA/MRV</b>	<b>Original Date: September 1997</b>
<b>CPT Code: 73725</b>	<b>Last Revised Date: <del>May</del> March 2022<del>1</del></b>
<b>Guideline Number: NIA_CG_058-1</b>	<b>Implementation Date: January 2023<del>2</del></b>

When a separate MRA and MRI exam is requested, documentation requires a medical reason that clearly indicates why additional MRI imaging of the lower extremity is needed.

**Lower Extremity MRA & Abdomen/Pelvis Magnetic Resonance Angiography (MRA) Runoff Requests:** Two authorization requests are required, one Abdomen MRA, CPT code 74185 and one for Lower Extremity MRA, CPT code 73725. This will provide imaging of the abdomen, pelvis, and both legs.

## INDICATIONS FOR LOWER EXTREMITY MRA/MRV

### Peripheral Vascular Disease

- Critical Limb ischemia **ANY** of the below with clinical signs of peripheral artery disease. Ultrasound imaging is not needed. If done and negative, it should still be approved due to high false negative rate<sup>1, 2</sup> (~~Shishchbor, 2016; Weiss, 2017~~)
  - Ischemic rest pain
  - Tissue loss
  - Gangrene
- Claudication with abnormal (ankle/brachial index, pulse volume recording or arterial Doppler)<sup>3-5</sup> (~~Ahmed, 2017; Pollak, 2012, 2013~~)
- Clinical concern for vascular cause of ulcers with abnormal or indeterminate ultrasound (ankle/brachial index, arterial Doppler)<sup>6</sup> (~~Rosyd, 2017~~)
- After stenting or surgery with signs of recurrent symptoms OR abnormal ankle/brachial index; abnormal or indeterminate arterial Doppler, OR pulse volume recording)<sup>4</sup> (~~Pollak, 2012~~)

**Popliteal Artery Entrapment Syndrome** with abnormal arterial ultrasound<sup>7</sup> (~~Williams, 2015~~)

**Deep Venous Thrombosis** with clinical suspicion of lower extremity DVT after abnormal or non-diagnostic ultrasound where a positive study would change management<sup>8-10</sup> (~~Hanley, 2013; Karande, 2016; Katz, 2014~~)

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**Clinical suspicion of vascular disease** with abnormal or indeterminate ultrasound or other imaging

- Tumor invasion<sup>11, 12</sup> (~~Jin, 2018; Kransdorf, 2018~~)
- Trauma<sup>13</sup> (~~Wani, 2012~~)
- Vasculitis<sup>14</sup> (~~Fonseka, 2017~~)
- Aneurysm<sup>15</sup> (~~Verikokos, 2014~~)
- Stenosis/occlusions<sup>16</sup> (~~Menke, 2010~~)

**Vascular Malformation**<sup>17, 18</sup>  
(~~Madani, 2015; Obara, 2019~~)

- Non diagnostic doppler ultrasound

**Traumatic injuries** with clinical findings suggestive of arterial injury – CTA preferred emergently<sup>13</sup> (~~Wani, 2012~~)

**Assessment/evaluation of suspected or known vascular disease/condition**

**Pre-operative/procedural evaluation**

- Pre-operative evaluation for a planned surgery or procedure<sup>3</sup> (~~Ahmed, 2017~~)

**Post-operative/procedural evaluation**

- A follow-up study may be needed to help evaluate a patient's progress after treatment, procedure, intervention, or surgery. Documentation requires a medical reason that clearly indicates why additional imaging is needed for the type and area(s) requested (~~Conte, 2019; Cooper, 2018~~).<sup>19, 20</sup>

**Special Circumstances**<sup>2</sup>  
(~~Weiss, 2017~~)

- High suspicion of an acute arterial obstruction - Arteriography preferred (the gold standard).
- Renal impairment
  - Not on dialysis
    - Mild to moderate, GFR 30-~~89~~45 ml/min MRA with contrast can be ~~done~~ performed
    - Severe, GFR < 30 ml/min MRA without contrast
  - On dialysis
    - CTA with contrast can be done
- Doppler ultrasound can be useful in evaluating bypass grafts

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## BACKGROUND

Magnetic resonance angiography (MRA) is a noninvasive alternative to catheter angiography for evaluation of vascular structures in the lower extremity. Magnetic resonance venography

(MRV) is used to image veins instead of arteries. MRA and MRV are less invasive than conventional x-ray digital subtraction angiography.

## OVERVIEW

**Noninvasive testing - Noninvasive hemodynamic testing** – “Noninvasive testing (NIVT), both before and after intervention, has been used for decades as a first-line investigatory tool in the diagnosis and categorization of PAD. It is widely available and provides a large amount of information at low cost without the use of ionizing radiation. NIVT can consist of one or more of the following components: the ABI, segmental pressure measurements (SPMs), pulse-volume recordings (PVRs), photoplethysmography (PPG), and transcutaneous oxygen pressure measurement (TcPO<sub>2</sub>) ~~(Cooper, 2018)~~.”<sup>20</sup>

**MRA of Foot** – Fast contrast-enhanced time-resolved 3D MR angiography is used in evaluating the arterial supply of the foot. It does not require the use of ionizing radiation and iodinated contrast medium and it is minimally invasive, safe, fast, and accurate. Dorsalis pedis bypass surgery is an option for preserving a foot in a patient with arterial occlusive disease and MRA may be used in the preoperative evaluation. It can discriminate arteries from veins and can provide other key information, e.g., patency of the pedal arch, presence of collateral pathways, and depiction of target vessel suitable for surgical bypass. Time-resolved gadolinium-enhanced MRA can identify injured fat pads in the foot before they have become ulcerated.

**MRA and arterial obstructive disease** – Catheter angiography is the standard of reference for assessing arterial disease but MRA with contrast-enhanced media has gained acceptance and can image the entire vascular system. Contrast agents such as high dose gadolinium have been associated with the development of nephrogenic systemic fibrosis in patients with chronic renal insufficiency, but newer agents are safer in this regard. Gadolinium dosage may be decreased without compromising image quality in high-spatial-resolution contrast-enhanced MRA of the lower extremity.

## POLICY HISTORY

Date	Summary
<u>March 2022</u>	<u>No changes</u> <u>Clarified renal impairment, not on dialysis, mild to moderate, GFR 30-45 ml/min MRA with contrast can be performed</u>
May 2021	No changes
May 2020	<ul style="list-style-type: none"><li>• Clarified that CTA does not include a baseline CT exam</li><li>• Expanded section about vascular malformation to include initial testing.</li><li>• Added information about renal function and contrast agents</li><li>• Added acute arterial obstruction and renal impairment</li><li>• Simplified language</li><li>• Updated references</li></ul>

May 2019	<ul style="list-style-type: none"> <li>• Added initial statement about approvals: 'Some indications are for MRI, CT, or MR or CT Arthrogram. More than one should not be approved at the same time'.</li> <li>• Added background information and updated references</li> </ul>
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~~Reviewed / Approved by NIA Clinical Guideline Committee~~

## GENERAL INFORMATION

~~It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.~~

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## **ADDITIONAL RESOURCES**

**1. Aboyans V, Ricco JB, Bartelink MEL, et al. 2017 ESC Guidelines on the Diagnosis and Treatment of Peripheral Arterial Diseases, in collaboration with the European Society for**

Vascular Surgery (ESVS): Document covering atherosclerotic disease of extracranial carotid and vertebral, mesenteric, renal, upper and lower extremity arteriesEndorsed by: the European Stroke Organization (ESO)The Task Force for the Diagnosis and Treatment of Peripheral Arterial Diseases of the European Society of Cardiology (ESC) and of the European Society for Vascular Surgery (ESVS). *Eur Heart J.* Mar 1 2018;39(9):763-816.

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